

In the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application (additions are shown in underline and deletions with bracketing):

1. (Withdrawn) A process for producing conductive polymers by an electrochemical polymerization method, wherein said conductive polymers have deformation property by electrochemical redox, said electrochemical polymerization method is a polymerization method using electrolyte including organic compounds as solvents, and wherein said organic compounds include

(1) chemical bond species selected at least one from a group composed of the chemical bond consisting of ether bond, ester bond, carbon-halogen bond, and carbonate bond and/or

(2) functional groups selected at least one from a group composed of functional groups consisting of hydroxyl group, nitro group, sulfone group, and nitril group

in a molecule, and said electrolyte includes anions which include trifluoromethanesulfonate ion and/or plural of fluorine atoms which bond to central atom.

2. (Withdrawn) A process for producing conductive polymers as set forth in claim 1, wherein said conductive polymer includes pyrrole and/or pyrrole derivatives in a molecular chain.
3. (Withdrawn) A conductive polymer form including a conductive polymer obtained by a producing process as set forth in claim 1 as a resin component.
4. (Currently Amended) A device using a conductive polymer form comprising a conductive polymer as a resin component for a driving part, wherein
 - said conductive polymer has a deformation property by electrochemical redox;
 - said conductive polymer is produced by an electrochemical polymerization method;
 - said electrochemical polymerization method is a polymerization method using electrolyte including organic compounds as solvents;
 - and wherein said organic compounds include
 - (1) chemical bond species selected at least one from a group composed of the chemical bond consisting of ether bond, ester bond, carbon-halogen bond, and carbonate bond and/or
 - (2) functional groups selected at least one from a group composed of functional groups consisting of hydroxyl group, nitro group, sulfone group, and nitril group in a molecule;

said electrolyte includes anions which include trifluoromethanesulfonate ion and/or plural of fluorine atoms which bond to central atom wherein said plural of fluorine atom is four or less;

said conductive polymer incorporates therein anions which include trifluoromethanesulfonate ion and/or plural of fluorine atoms which bond to central atom, said anions being present in an amount from 0.1% to 30% by weight of said electrolyte ; and

the device is at least one kind selected from the group consisting of a positioning device, a posture control device, an elevating device, a carrier device, a moving device, a regulating device, an adjusting device, a guiding device, or a joint device.

5. (Currently Amended) A pressing device using a conductive polymer form comprising a conductive polymer as a resin component for a pressing part, wherein

said conductive polymer has a deformation property by electrochemical redox;

said conductive polymer is produced by an electrochemical polymerization method;

said electrochemical polymerization method is a polymerization method using electrolyte including organic compounds as solvents;

and wherein said organic compounds include

(1) chemical bond species selected at least one from a group composed of the chemical bond consisting of ether bond, ester bond, carbon-halogen bond, and carbonate bond and/or

(2) functional groups selected at least one from a group composed of functional groups consisting of hydroxyl group, nitro group, sulfone group, and nitril group in a molecule;

said electrolyte includes anions which include trifluoromethanesulfonate ion and/or plural of fluorine atoms which bond to central atom, wherein said plural of fluorine atom is four or less;

said conductive polymer incorporates therein anions which include trifluoromethanesulfonate ion and/or plural of fluorine atoms which bond to central atom, said anions being present in an amount from 0.1% to 30% by weight of said electrolyte.

6. (Withdrawn) An electrochemomechanical deformation method deforming a conductive polymer form as set forth in claim 3 by electrochemical redox in electrolyte.

7. (Withdrawn) An electrochemomechanical deformation method as set forth in claim 6, wherein electrochemomechanical deformation is conducted under temperature environment of not lower than a room temperature.

8. (Withdrawn) An electrochemomechanical deformation method as set forth in claim 6, including compounds selected at least one from the

group consisting of anions which include trifluoromethanesulfonate ion and/or plural of fluorine atoms which bond to central atom trifluoromethanesulfonate ion and/or plural of fluorine atoms which bond to central atom, and sulfonate salt whose carbon number is not greater than 3 in electrolyte.

9. (Withdrawn) An electrochemomechanical deformation method as set forth in claim 6, including sodium chloride in said electrolyte.

10. (Withdrawn) Laminates including conductive polymer layers and solid electrolyte layers, wherein said conductive polymer layers includes conductive polymers set forth in claim 3.

11. (Currently Amended) A device using laminates comprising conductive polymer layers and solid electrolyte layers a driving part, wherein

said conductive polymer has a deformation property by electrochemical redox;

said conductive polymer is produced by an electrochemical polymerization method;

said electrochemical polymerization method is a polymerization method using electrolyte including organic compounds as solvents;

and wherein said organic compounds include

(1) chemical bond species selected at least one from a group composed of the chemical bond consisting of ether bond, ester bond, carbon-halogen bond, and carbonate bond and/or

(2) functional groups selected at least one from a group composed of functional groups consisting of hydroxyl group, nitro group, sulfone group, and nitril group in a molecule;

said electrolyte includes anions which include trifluoromethanesulfonate ion and/or plural of fluorine atoms which bond to central atom, wherein said plural of fluorine atom is four or less;

said conductive polymer incorporates therein anions which include trifluoromethanesulfonate ion and/or plural of fluorine atoms which bond to central atom, said anions being present in an amount from 0.1% to 30% by weight of said electrolyte; and

the device is at least one kind selected from the group consisting of a positioning device, a posture control device, an elevating device, a carrier device, a moving device, a regulating device, an adjusting device, a guiding device, or a joint device.

12. (Currently Amended) A pressing device using laminates comprising conductive polymer layers and solid electrolyte layers for a pressing part, wherein

said conductive polymer has a deformation property by electrochemical redox;

said conductive polymer is produced by an electrochemical polymerization method;

said electrochemical polymerization method is a polymerization method using electrolyte including organic compounds as solvents;

and wherein said organic compounds include

(1) chemical bond species selected at least one from a group composed of the chemical bond consisting of ether bond, ester bond, carbon-halogen bond, and carbonate bond and/or

(2) functional groups selected at least one from a group composed of functional groups consisting of hydroxyl group, nitro group, sulfone group, and nitril group in a molecule;

said electrolyte includes anions which include trifluoromethanesulfonate ion and/or plural of fluorine atoms which bond to central atom, wherein said plural of fluorine atom is four or less;

said conductive polymer incorporates therein anions which include trifluoromethanesulfonate ion and/or plural of fluorine atoms which bond to central atom.

13. (Withdrawn) A film-like conductive polymer formed by electrochemical redox wherein deformation ratio is not less than 5% in the film face direction.

14. (Withdrawn) Laminates including conductive polymer-containing layers and solid electrolyte layers, wherein conductive polymers included

in said conductive polymer-containing layers are conductive polymers obtained by the process for producing conductive polymers set forth in claim 1.

15. (Cancelled).

16. (Cancelled).

17. (Withdrawn) A conductive polymer form deforming by electrochemical redox, wherein electrochemical strain of conductive polymers is not less than 3% in the length direction.

18. (Withdrawn) A conductive polymer form deforming by electrochemical redox, wherein electrochemical strain per redox cycle of 20 seconds is not less than 3% in the length direction.

19. (Currently Amended) An actuator comprising a moving part, counter electrode, and electrolyte, wherein the moving portion comprises a conductive polymer;

said conductive polymer has a deformation property by electrochemical redox;

said conductive polymer is produced by an electrochemical polymerization method;

said electrochemical polymerization method is a polymerization method using electrolyte including organic compounds as solvents;

and wherein said organic compounds include

(1) chemical bond species selected at least one from a group composed of the chemical bond consisting of ether bond, ester bond, carbon-halogen bond, and carbonate bond and/or

(2) functional groups selected at least one from a group composed of functional groups consisting of hydroxyl group, nitro group, sulfone group, and nitril group in a molecule;

said electrolyte includes anions which include trifluoromethanesulfonate ion and/or plural of fluorine atoms which bond to central atom wherein said plural of fluorine atom is four or less;

said conductive polymer incorporates therein anions which include trifluoromethanesulfonate ion and/or plural of fluorine atoms which bond to central atom, said anions being present in an amount from 0.1% to 30% by weight of said electrolyte.

20. (Previously Presented) An actuator according to claim 19, further comprising an operational part, a counter electrode, and electrolyte, wherein the moving portion deforms by electrochemical redox and the actuator deforms not less than 3% in the length direction.

21. (Previously Presented) An actuator according to claim 19, further comprising an operational part, a counter electrode, and electrolyte, wherein the moving portion deforms by electrochemical redox and electrochemical strain of the actuator per redox cycle of 20 seconds is not less than 3% in the length direction.

22. (Original) An artificial muscle using an actuator as set forth in claim 19.

23. (Previously Presented) A device using an actuator set forth in claim 19 for a driving part,

wherein the device is at least one kind selected from the group consisting of a positioning device, a posture control device, an elevating device, a carrier device, a moving device, a regulating device, an adjusting device, a guiding device, or a joint device.

24. (Original) A pressing device using laminates set forth in claim 19 for a pressing part.

25. (Withdrawn) A process for producing conductive polymers by an electrochemical polymerization method, wherein said conductive polymers have deforming property by electrochemical redox, in said electrochemical polymerization method, trifluoromethanesulfate ion and/or anions which include plural of fluorine atoms to a central atom are included in electrolyte, and said electrochemical polymerization method employs a metal electrode as the working electrode on which conductive polymers are formed.

26. (Withdrawn) A process for producing conductive polymers as set forth in claim 25, wherein said conductive polymer includes pyrrole and/or derivatives in a molecular chain.

27. (Withdrawn) A conductive polymer including a conductive polymer obtained by a producing process set forth in claim 25 as a resin component.

28. (Withdrawn) A conductive polymer form including a conductive polymer obtained by a producing process set forth in claim 25 as resin component.

29. (Currently Amended) A device using a conductive polymer form comprising a conductive polymer as a resin component for a driving part, wherein

said conductive polymer has a deformation property by electrochemical redox;

said conductive polymer is produced by an electrochemical polymerization method;

said electrochemical polymerization method employs electrolyte and a metal electrode as a working electrode on which the conductive polymer is formed;

said electrolyte includes anions which include trifluoromethanesulfate ion and/or plural of fluorine atoms which bond to ~~[[cental]]~~ central atom wherein said plural of fluorine atom is four or less;

said conductive polymer incorporates therein anions which include said trifluoromethanesulfate ion and/or plural of fluorine atoms which

bond to [[cental]] central atom, said anions being present in an amount from 0.1% to 30% by weight of said electrolyte; and

the device is at least one kind selected from the group consisting of a positioning device, a posture control device, an elevating device, a carrier device, a moving device, a regulating device, an adjusting device, a guiding device, or a joint device.

30. (Currently Amended) A pressing device using laminates comprising a conductive polymer as a resin component for a pressing part, wherein

said conductive polymer has a deformation property by electrochemical redox;

said conductive polymer is produced by an electrochemical polymerization method;

said electrochemical polymerization method employs electrolyte and a metal electrode as a working electrode on which the conductive polymer is formed;

said electrolyte includes anions which include trifluoromethanesulfate ion and/or plural of fluorine atoms which bond to [[cental]] central atom wherein said plural of fluorine atom is four or less;

said conductive polymer incorporates therein anions which include said trifluoromethanesulfate ion and/or plural of fluorine atoms which

bond to [[cental]] central atom, said anions being present in an amount from 0.1% to 30% by weight of said electrolyte.

31. (Withdrawn) Laminates including conductive polymer layers and solid electrolyte layers, wherein said conductive polymer layers include conductive polymers are conductive polymers obtained by the process for producing conductive polymers set forth in claim 25.

32. (Currently Amended) A device using laminates comprising conductive polymer layers and solid electrolyte layers for a driving part, wherein

said conductive polymer has deformation property by electrochemical redox;

said conductive polymer is produced by an electrochemical polymerization method;

said electrochemical polymerization method employs electrolyte and a metal electrode as a working electrode on which the conductive polymer is formed;

said electrolyte includes anions which include trifluoromethanesulfate ion and/or plural of fluorine atoms which bond to [[cental]] central atom wherein said plural of fluorine atom is four or less;

said conductive polymer incorporates therein anions which include said trifluoromethanesulfate ion and/or plural of fluorine atoms which

bond to [[cental]] central atom, said anions being present in an amount from 0.1% to 30% by weight of said electrolyte; and

the device is at least one kind selected from the group consisting of a positioning device, a posture control device, an elevating device, a carrier device, a moving device, a regulating device, an adjusting device, a guiding device, or a joint device.

33. (Currently Amended) A pressing device using laminates comprising conductive polymer layers and solid electrolyte layers for a driving part, wherein

said conductive polymer has deformation property by electrochemical redox;

said conductive polymer is produced by an electrochemical polymerization method;

said electrochemical polymerization method employs electrolyte and a metal electrode as a working electrode on which the conductive polymer is formed;

said electrolyte includes anions which include trifluoromethanesulfate ion and/or plural of fluorine atoms which bond to [[cental]] central atom wherein said plural of fluorine atom is four or less;

said conductive polymer incorporates therein anions which include said trifluoromethanesulfate ion and/or plural of fluorine atoms which

bond to [[cental]] central atom, said anions being present in an amount from 0.1% to 30% by weight of said electrolyte.

34. (Currently Amended) An actuator comprising a moving part, a counter electrode, and electrolyte, wherein

the moving part comprises a conductive polymer;

said conductive polymer has deformation property by electrochemical redox;

said conductive polymer is produced by an electrochemical polymerization method;

said electrochemical polymerization method employs electrolyte and a metal electrode as a working electrode on which the conductive polymer is formed;

said electrolyte includes anions which include trifluoromethanesulfate ion and/or plural of fluorine atoms which bond to [[cental]] central atom wherein said plural of fluorine atom is four or less;

said conductive polymer incorporates therein anions which include said trifluoromethanesulfate ion and/or plural of fluorine atoms which bond to [[cental]] central atom, said anions being present in an amount from 0.1% to 30% by weight of said electrolyte.

35. (Original) An artificial muscle using an actuator set forth in claim

34.

36. (Previously Presented) A device using an actuator set forth in claim 34 for a driving part, wherein

the device is at least one kind selected from the group consisting of a positioning device, a posture control device, an elevating device, a carrier device, a moving device, a regulating device, an adjusting device, a guiding device, or a joint device.

37. (Original) A pressing device using laminates set forth in claim 34 for a pressing part.

38. (Previously Presented) A device using the conductive polymer form set forth in claim 4 for a driving part, wherein the conductive polymer comprises pyrrole and/or pyrrole derivatives in a molecular chain.

39. (New) The device of claim 4, wherein said electrolyte further comprises at least one compound selected from the group consisting of sulfonic acid salts having less than 4 carbon atoms.

40. (New) The device of claim 4, wherein the deformation ratio of the conductive polymer is at least 3% in the longitudinal direction.

41. (New) The device of claim 4, wherein the electrochemical stress of the conductive polymer is at least 3.9MPa.